PHILIP MORRIS, INC.

LAW DEPARTMENT MEMORANDUM

RICHMOND, VIRGINIA

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Date: 26 August 1976

From: S. Hutcheson

Subject: LOW TAR DELIVERY DEVICE - PM 737
LOW TAR DELIVERY CIGARETTE FILLER - PM 738

Summary of Patent Search

A search of the prior patent art pertaining to the above-cited cases was conducted using the PM patent data base. The basic concept of adding tobacco extracts or synthetic tobacco flavorants to thermally degraded tobacco or cellulosic materials was searched. The results are summarized below.

I. General Background

A series of patents issued to Robert Craig Anderson of Imperial Chemical Industries, Ltd. were retrieved. Specifically, the patents to Anderson disclose smoking substitutes comprised of thermally degraded carbohydrates such as cellulose, α-cellulose, cellulose ethers, and more recently, degraded tobacco. The thermal degradation in all cases is achieved in the presence of a catalyst at about 100° to 250°C. The degraded smoking mixtures may be further enhanced by the addition of nicotine-free extracts of Nicotiana Rustica, various synthetic flavorants, nicotine, and ammonia-bearing compounds such as urea, biuret, ammonium sulfate, etc. The formulated smoking mixtures may be fabricated into sheet form similar to reconstituted tobacco, shredded, and mixed with tobacco in varying percentages to produce smoking articles which, in some instances, are alledged to have a lowered tar delivery. The patent disclosing thermally degraded tobacco states that there is a reduction in formaldehyde delivery in the smoke.

U. S. Patent 3,805,803 to Roger Hedge (Brown & Williamson) discloses and claims a method of reducing the total particulate matter from tobacco smoke by diluting reconstituted tobacco with finely-divided carbon powder. The sheet contains carbon from about 10 to 50% by weight of the composition, and it is stated that TPM is reduced from about 20 to 90%. The tobacco component in the sheet is burley stem which has been extracted with hot water and the resultant solubles discarded.

A series of patents with Theodore S. Briskin as the major inventor (3,861,401 and 3,861,402) are examples of issued patents which deal with the thermal degradation of cellulose and cellulosic materials for the formation of a synthetic smoking material. U. S. Patent 3,608,560 to Briskin discloses the incorporation of combustible carbon in the range of 2 to 50% by weight of oxidized cellulosic material. The carbon

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acts as an absorbent for uniform distribution of liquid additives (i.e., flavors), acts to extract volatile organic components from the smoke and fumes, and improves the ash quality of the mixture. The thus formed mixture may be smoked alone or in combination with tobacco.

II. Prior Work Within Philip Morris

The basic concept of using heat-treated cellulose materials in smoking mixtures has resulted in intensive research at Philip Morris, and five disclosures have been submitted to our attorneys in the past two years. However, none have been filed in the Patent Office at this time. It would appear that the basic concepts of PM 737 and 738 are closely related to the PM cases which are summarized below.

PM 690 (sent to attorneys 9/75) discloses the use of thermally degraded tobacco by-products in combination with reconstituted tobacco material to improve the quality of the smoke and to reduce the components of TPM in the smoke. This disclosure distinguishes over the prior art in that it contains no tobacco substitutes but is made from 100% tobacco. The thermally degraded material is preferably tobacco stems and stalks.

PM 647 (sent to attorneys 11/74) discloses shredded cellulose which is pyrolyzed at 150 to 400°C followed by extraction with an alkaline solvent. The thus treated cellulose is blended with tobacco to produce smoking mixtures having reduced tar deliveries.

PM 662 (sent to attorneys 9/75) discloses the incorporation of heat-treated carbohydrate into the matrix of reconstituted tobacco sheets. The resultant sheet has reduced tar and nicotine content as well as puff count. The heat-treated carbohydrate material is produced by the controlled pyrolysis of a carbohydrate such as α-cellulose, wood or wood pulp, straw, flax, bamboo, cotton, hemp, rice fibers, etc.

PM 695 (sent to attorneys 11/75) discloses heat treatment of stems and/or stalk material either alone or after having been incorporated into conventional tobacco sheet material. The pyrolytic by-products are removed by means of steam, water, vacuum, etc. This process is especially effective in up-grading burley stems.

PM 698 (sent to attorneys 4/76) discloses a tobacco replacement material (low-tar-filler, LTF) prepared by heat degradation of carbohydrates. Non-combustible fillers, burn binders, coloring agents, and flavoring mixtures may be added to the heat-degraded carbohydrate base, and the mixture may be prepared for filler in the conventional manner used for making reconstituted tobacco sheets.

III. Supplemental Search Results

An additional search directed specifically to low-tar smoking devices (PM 737) resulted in two patents which were considered significant.

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U. S. Patent 3,738,374 to Harry Bennett (B. R. Laboratory) discloses the production of cigars and cigarettes which have a tobacco substitute filler. The substitute is made from carbon or graphite fibers, mat, or cloth associated with an oxidizing agent. Various additives are incorporated in the carbon to improve its taste and smoking characteristics. Incombustible materials such as asbestos, rock wool, steel wool, or ceramic fiber may also be incorporated. The inventor states that the mixture "produces vapors and condensates free from nicotine and has only a minute amount of tars."

U. S. Patent 2,907,686 to Henry Siegel (no assignee given) discloses a tobacco substitute comprising activated or non-activated carbon which serves both as a non-toxic fuel and as a carrier for the flavoring agents. Charred cylinders of wood provide the source of his charcoal substrate. The flavorants disclosed are synthetic or natural agents of non-tobacco origin.

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cc: A. Palmer

The following patents and PM disclosures were considered in preparing this summary..

British Patents

1,362,613	Robert Craig Anderson
1,362,751	"
1,364,103	"
1,364,104	"
1,317,584	"

U. S. Patents

3,884,245	Robert Craig Anderson
3,892,244	"
3,894,543	"
3,924,644	"
3,943,942	"
3,805,803	Roger W. Hedge
3,608,560	Theodore Briskin
3,861,401	"
3,861,402	"
2,907,686	Henry J. Siegel
3,738,374	Harry Bennett

PM Disclosures

647 - N. B. Rainer and T. E. Majewski
662 - R. B. Seligman and G. D. Keritsis
690 - A. T. Lendvay and H. Wakeham
695 - A. T. Lendvay
698 - G. Keritsis

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